Evaluating Potential Fishery Effects of Changes to Other Species Management

Analysis Conducted
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Focus of Discussion Paper

- Is the species in question, if managed independently, likely to be of management concern such that management measures would be necessary to prevent overfishing?
- Which fisheries (gear/target species) are primarily responsible, and thus most likely to be affected by management measures, for the incidental catch of the species in question?
- What are the implications of spatial and temporal aspects of the incidental catch?
- In light of the answers to the above questions, what methodology would be appropriate to analyze the likely effects on fishery revenue of potentially needed management measures?

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The Alternative Set

- Alternative 1: No Action
- Alternative 2: Eliminate "other species" assemblage and manage squids, skates, sculpins, sharks, and octopi as separate assemblages.
- Alternative 3: Manage only BSAI skates and BSAI and GOA sculpins as separate assemblages.
- Alternative 4: Manage only BSAI skates as a separate assemblage.
- Alternative 5: Add grenadiers to BSAI and GOA TAC specification process.
  - Option 1. separate assemblage
  - Option 2. in other species assemblage

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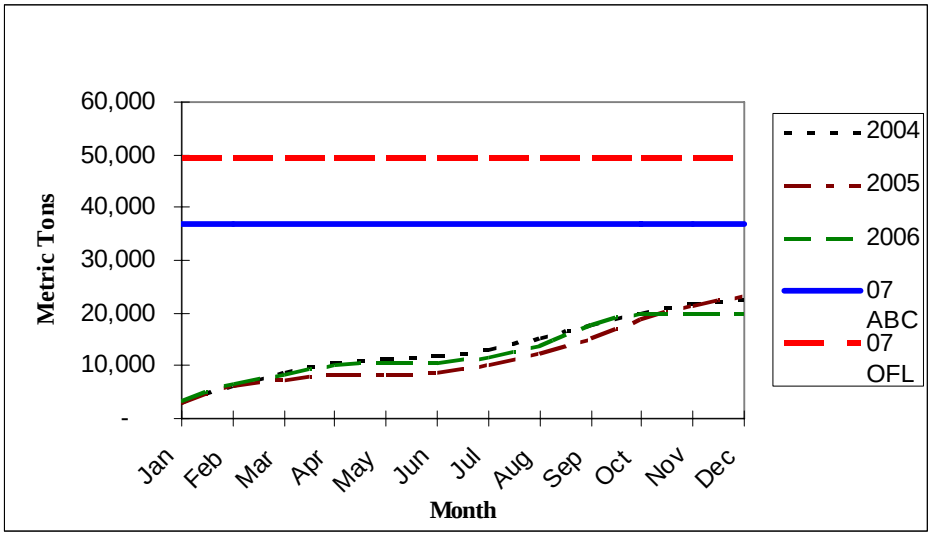
Cumulative BSAI Skate Catch by Year (2004-6) Relative to Skate ABC and OFL



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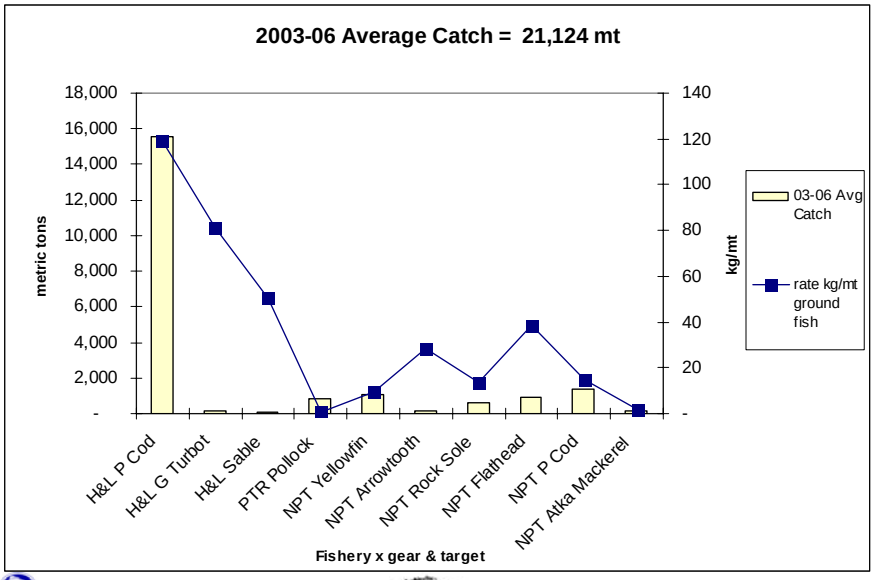
BSAI Skate Average Catch by Gear and Target



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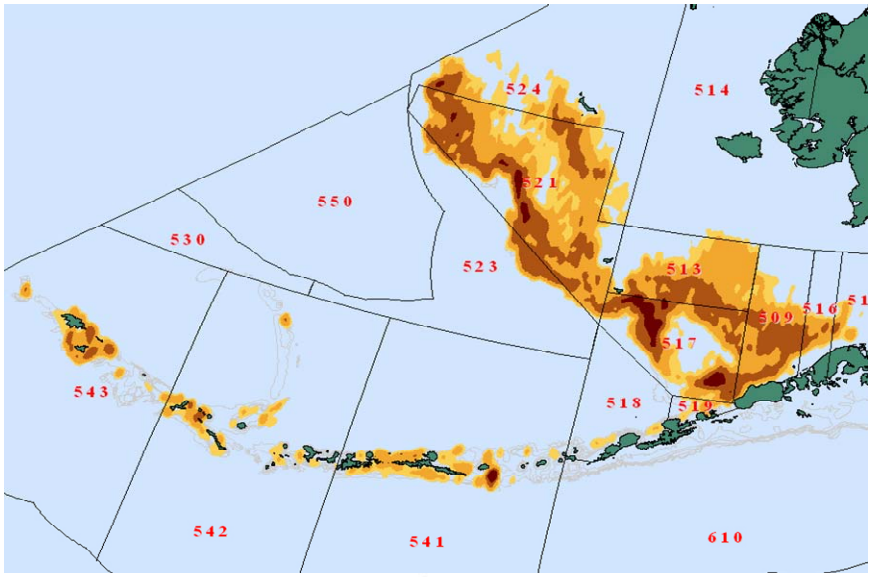
BSAI Skate Catch Density (kg/mt groundfish) 2003-2005



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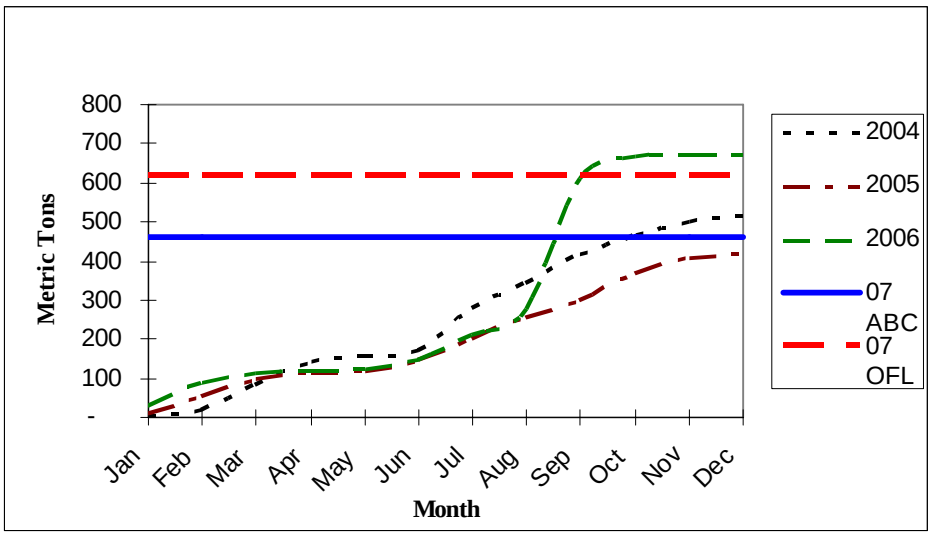
Cumulative BSAI Sharks Catch by Year (2004-6) Relative to ABC and OFL



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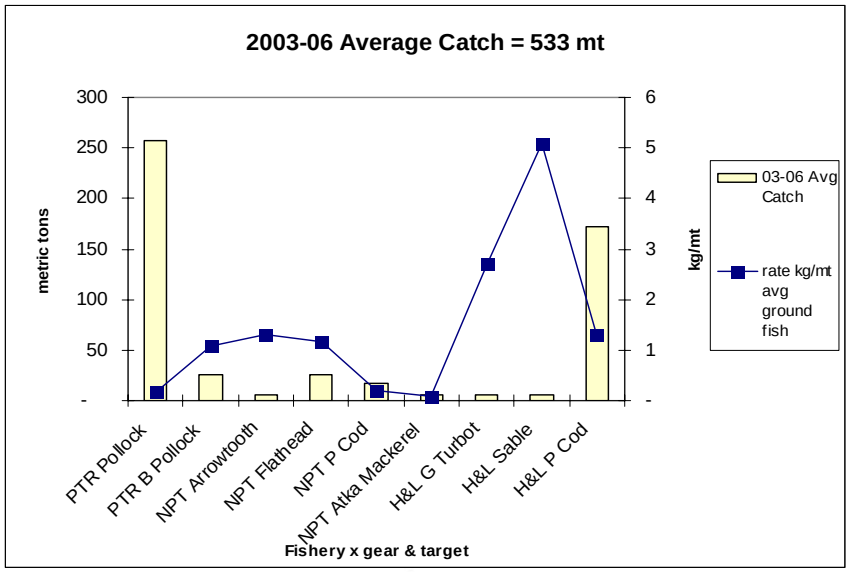
BSAI Sharks Average Catch by Gear and Target



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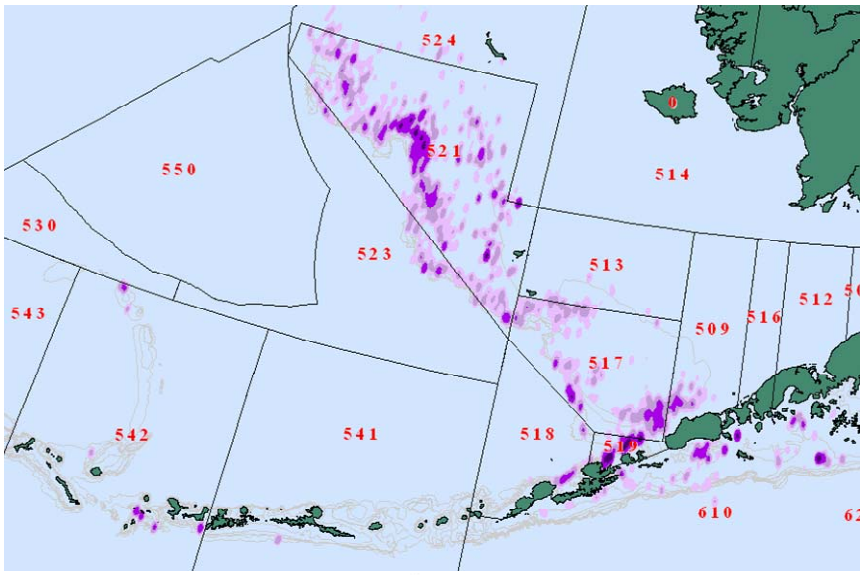
BSAI Shark Catch Density (kg/mt groundfish) 2003-2005



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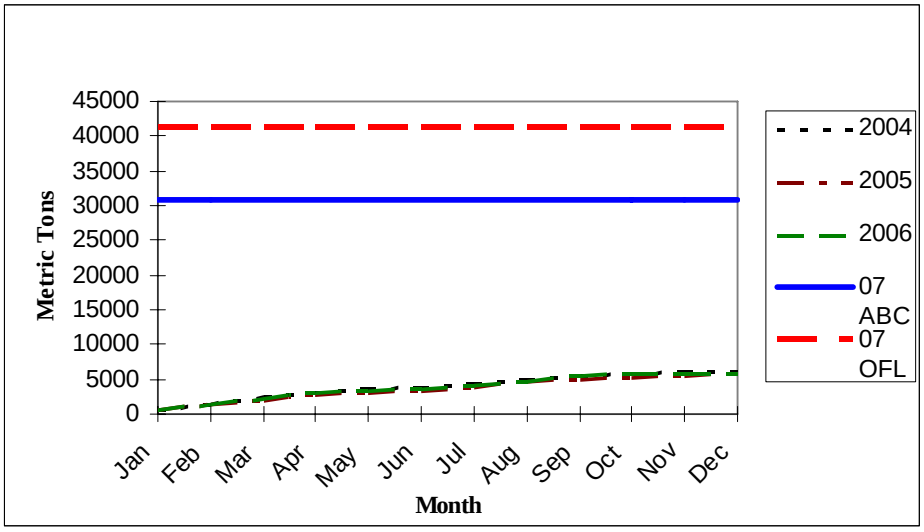
Cumulative BSAI Sculpins Catch by Year (2004-6) Relative to ABC and OFL



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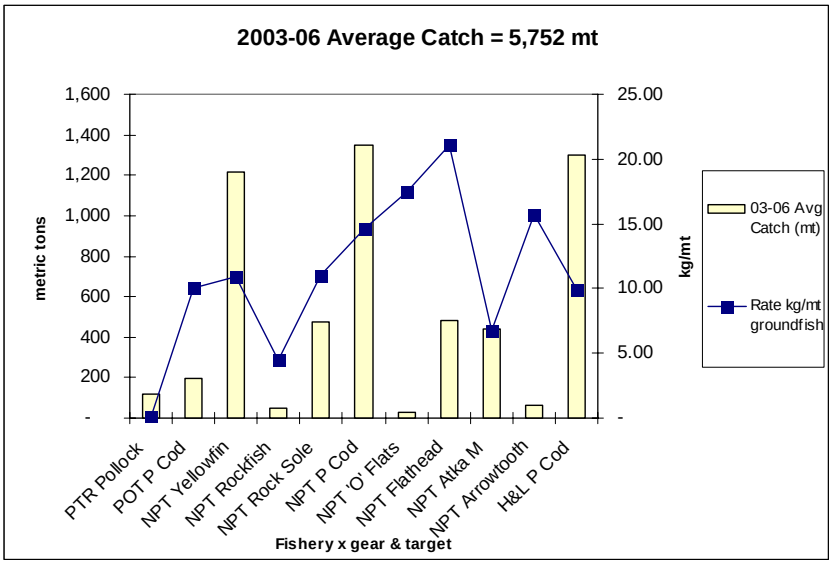
BSAI Sculpins Average Catch by Gear and Target



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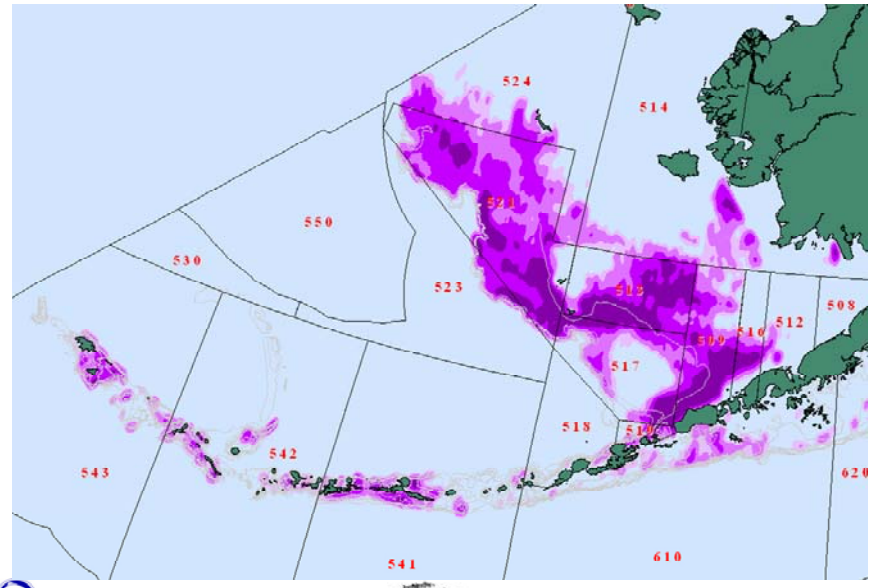
BSAI Sculpin Catch Density (kg/mt groundfish) 2003-2005



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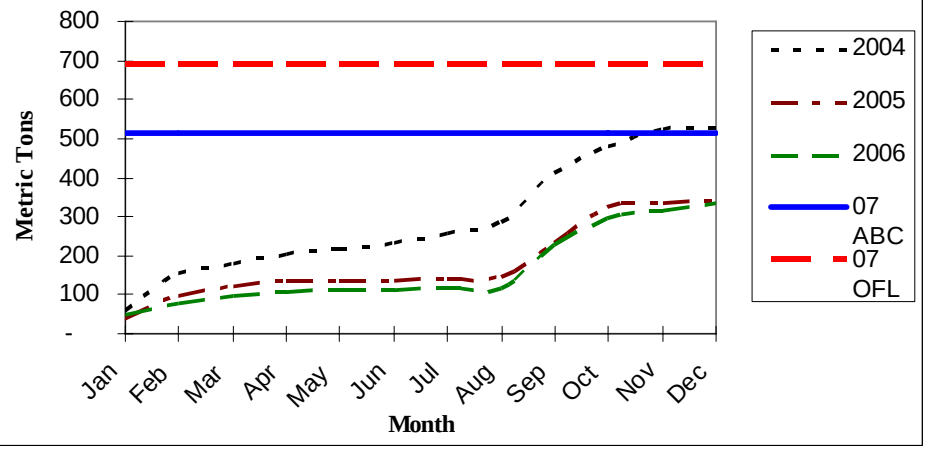
Cumulative BSAI Octopi Catch by Year (2004-6) Relative to ABC and OFL



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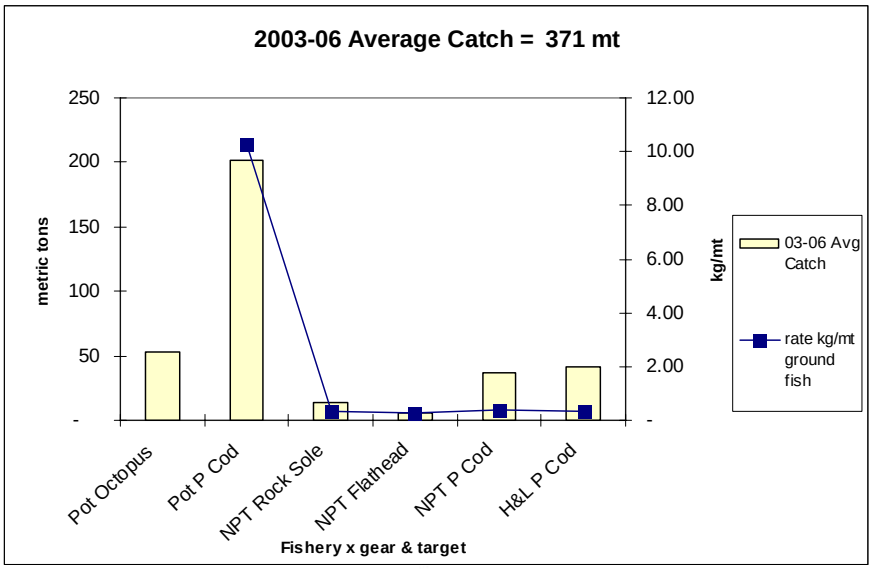
BSAI Octopi Average Catch by Gear and Target



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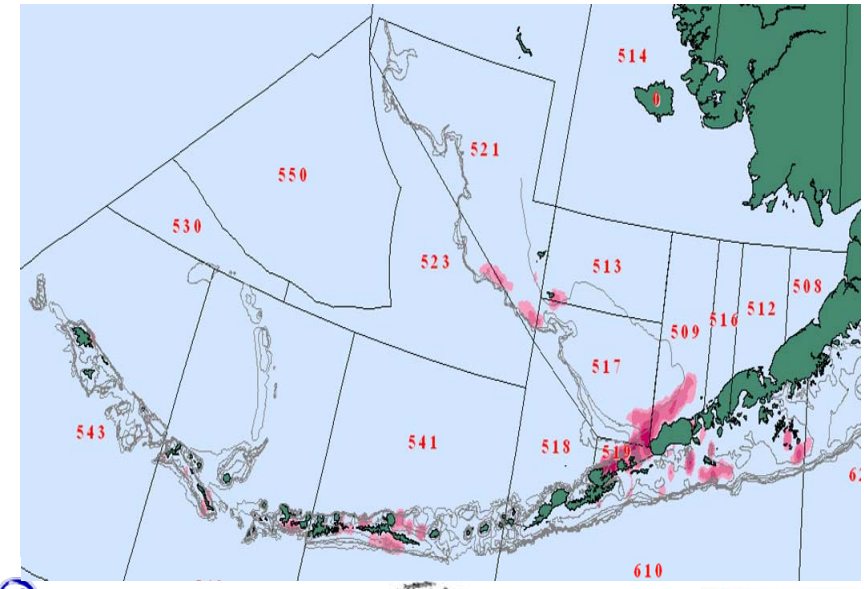
BSAI Octopi Catch Density (kg/mt groundfish) 2003-2005



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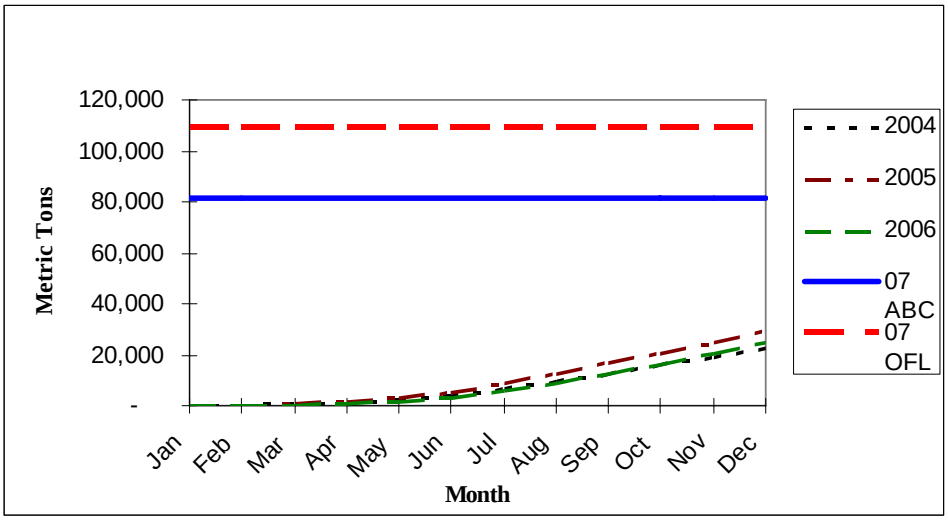
Cumulative BSAI Grenadier Catch by Year (2004-06) Relative to ABC and OFL



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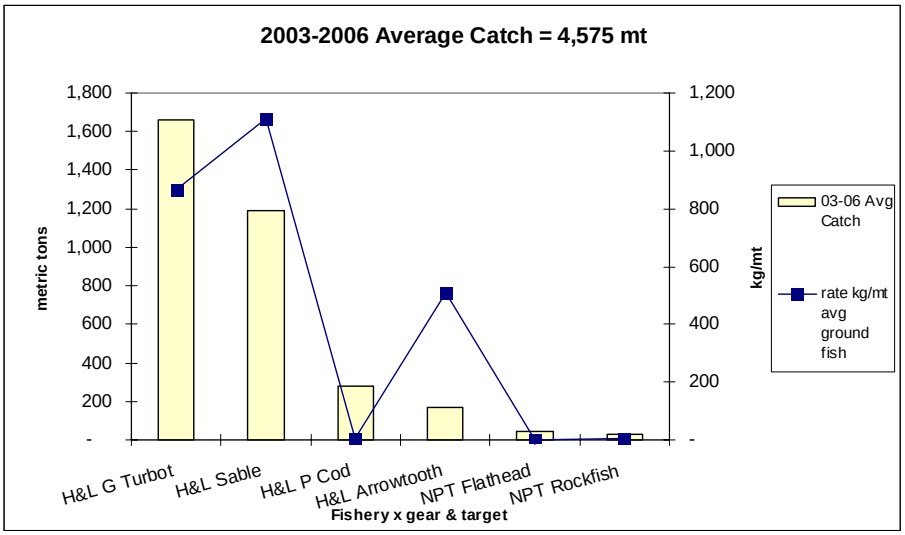
BSAI Grenadier Average Catch by Gear and Target



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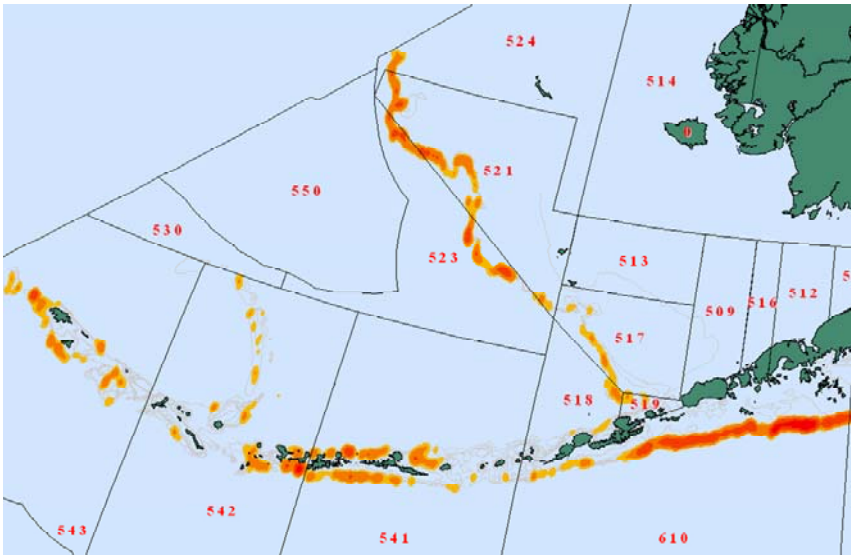
BSAI Grenadiers Catch Density (kg/mt groundfish) 2003-2005



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BSAI Summary Table

BSAI Species	Management Concern	Directed Fishery Possible	Gear/Target Potentially Affected	Spatial Context	Potential Management Measures	Potential Closure Timing
Skates (Tier 5)	No	Yes	Pacific cod H&L	Broad	Broad Closures	n/a
Sharks (Tier 6)	Yes	No	Pollock Pelagic Trawl, Pacific cod H&L	Broad	Broad Closures	Aug.-Sept.
Sculpins (Tier 5)	No	Yes	Yellowfin sole NPT, Pacific cod NPT, Pacific cod H&L	Broad	Broad Closures	n/a
Octopi (Tier 6)	Possibly	Possibly	Pacific cod pot, Pacific cod H&L, Pacific cod NPT	Patchy / Discrete	Voluntary / Discrete Closures	October
Grenadiers (Tier 5)	No	Possibly	G.Turbot H&L, Sablefish H&L	Broad / Bathymetry	Broad Closures	n/a

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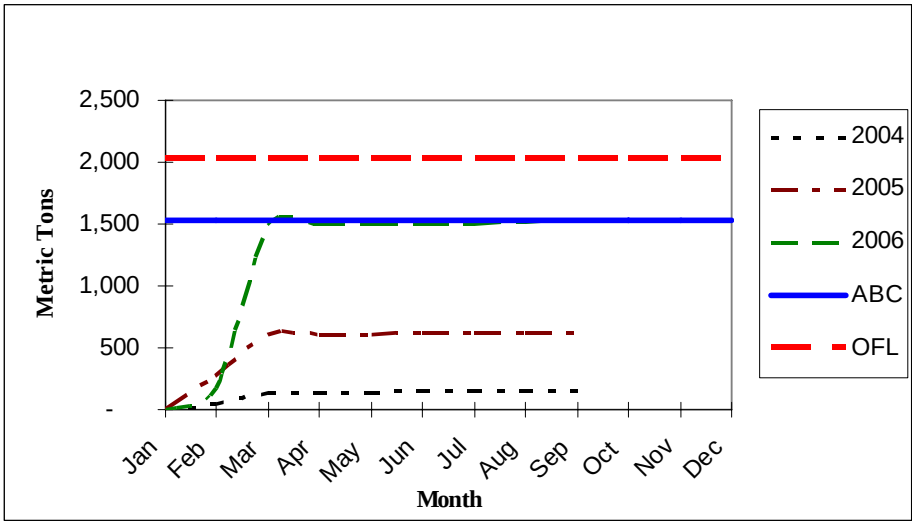
Cumulative GOA Squid Catch by Year (2004-6) Relative to ABC and OFL



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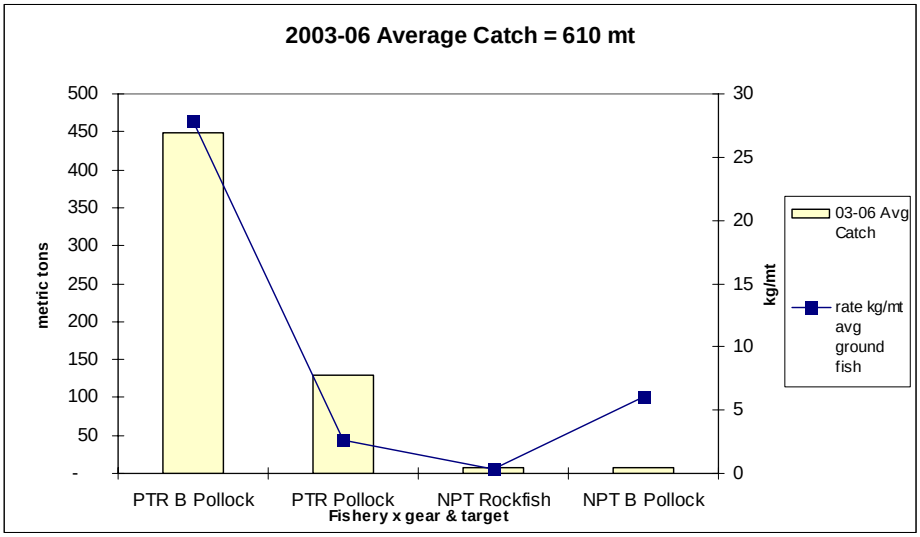
GOA Squid Average Catch by Gear and Target



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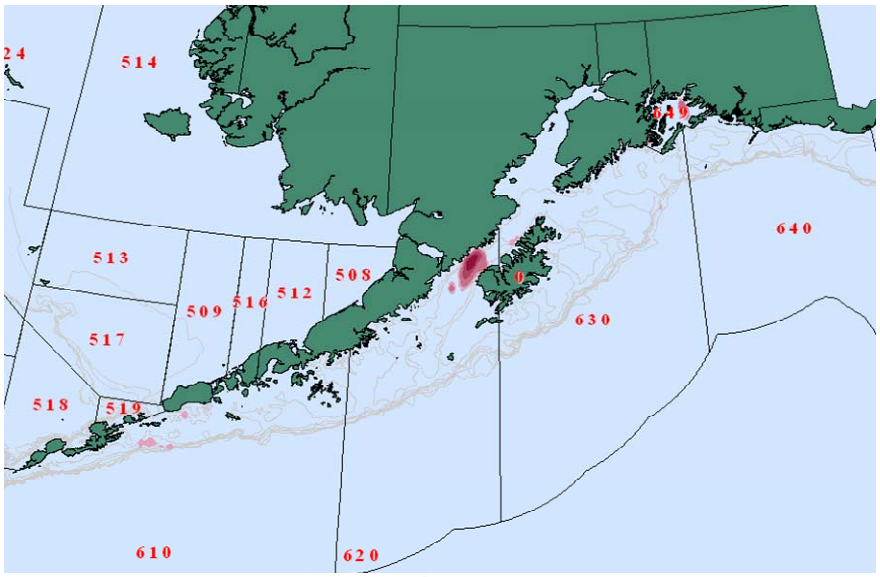
GOA Squid Catch Density (kg/mt groundfish) 2003-2006



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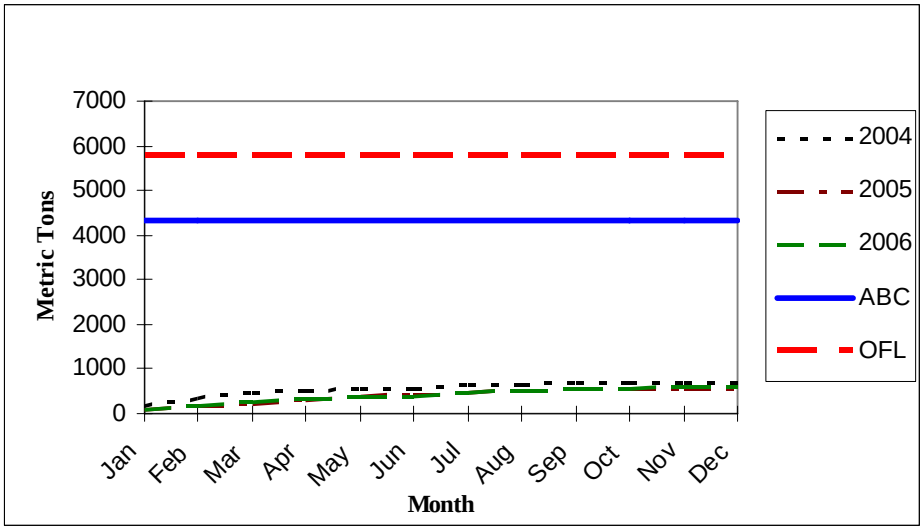
Cumulative GOA Sculpins Catch by Year (2004-6) Relative to ABC and OFL



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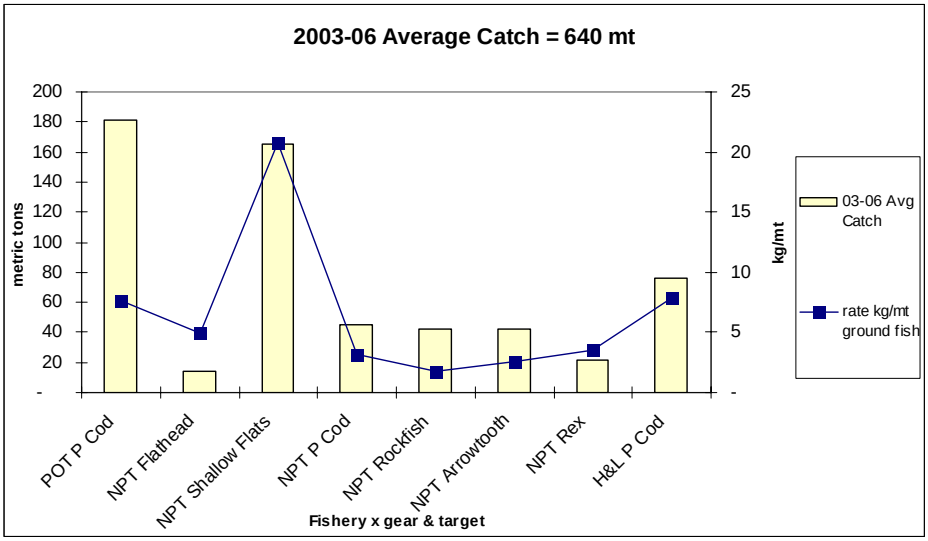
GOA Sculpins Average Catch by Gear and Target



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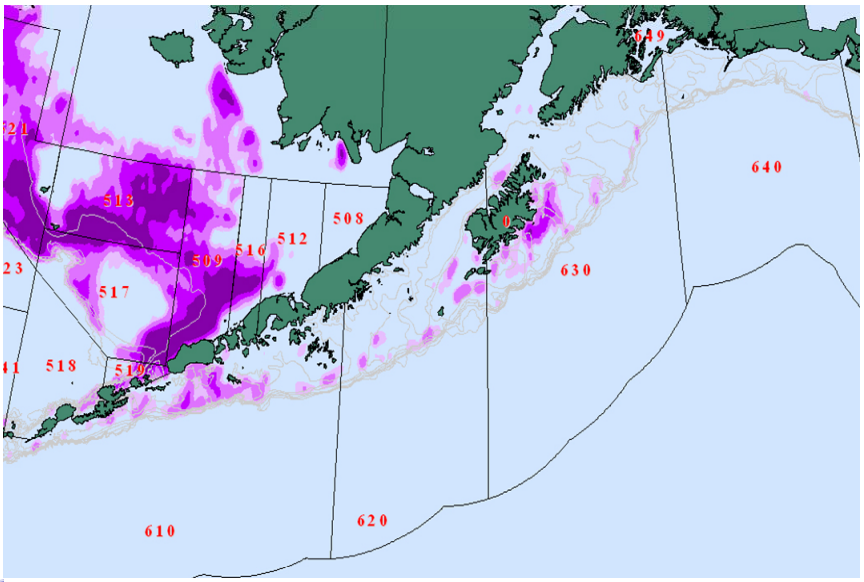
GOA Sculpin Catch Density (kg/mt groundfish) 2003-2005



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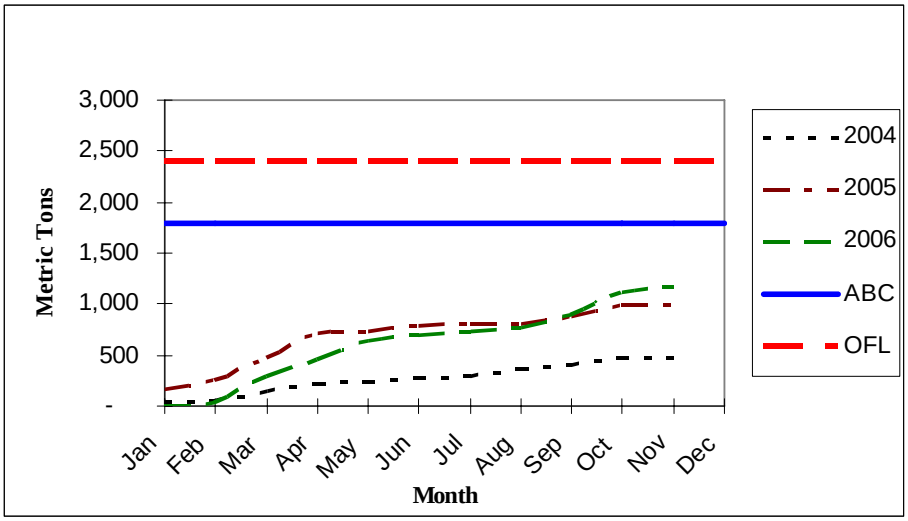
Cumulative GOA Sharks Catch by Year (2004-6) Relative to ABC and OFL



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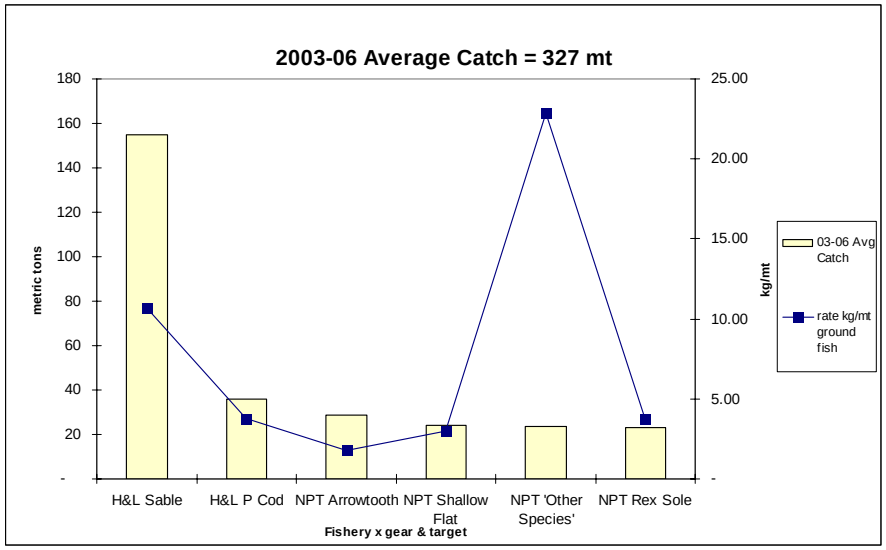
GOA Shark Average Catch by Gear and Target



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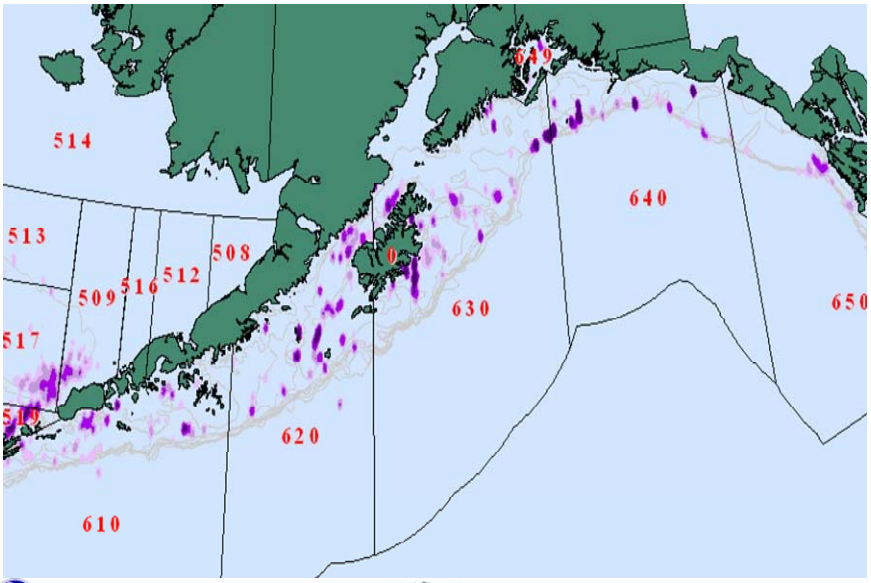
GOA Shark Catch Density (kg/mt groundfish) 2003-2005



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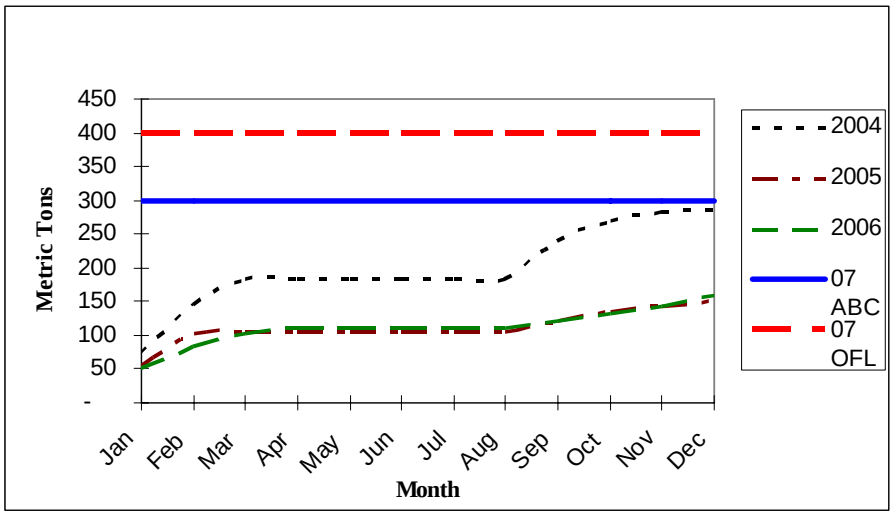
Cumulative GOA Octopi Catch by Year (2004-2006) Relative to OFL and ABC



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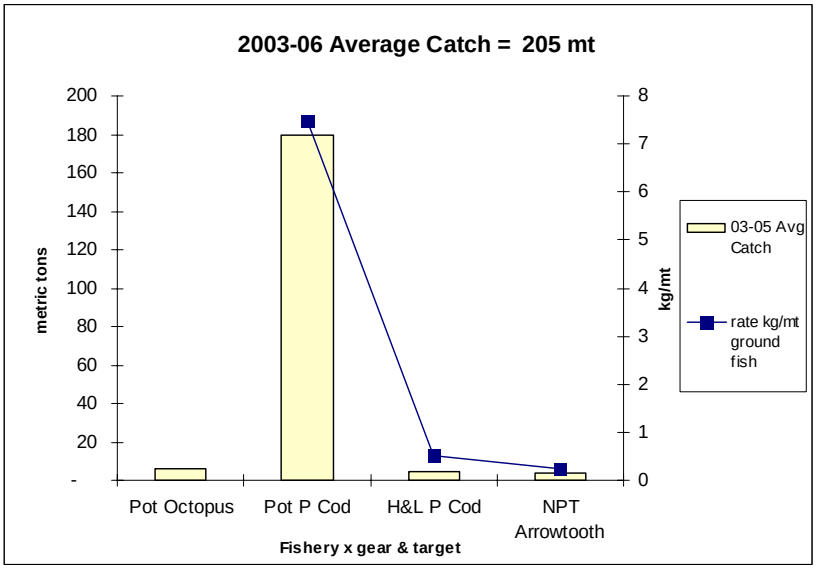
GOA Octopi Average Catch by Gear and Target



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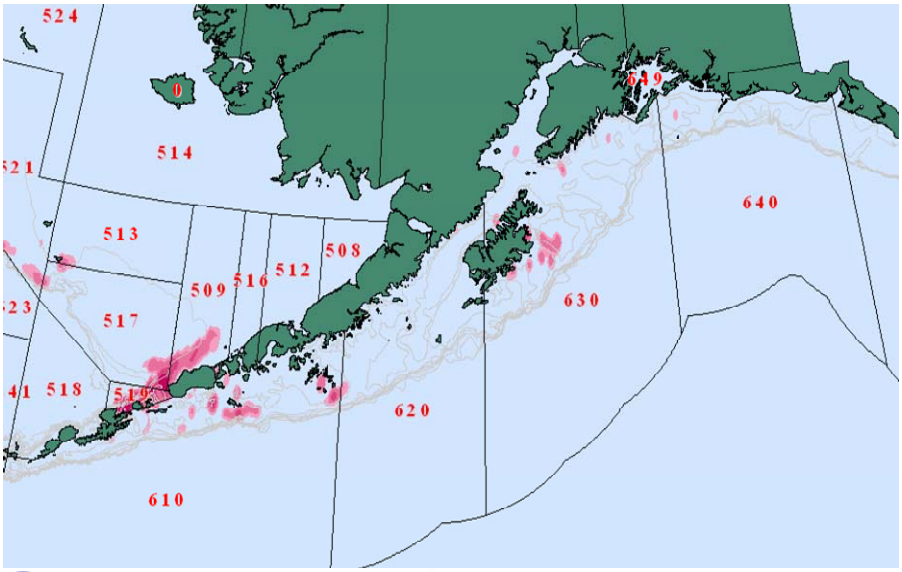
GOA Octopi Catch Density (kg/mt groundfish) 2003-2005



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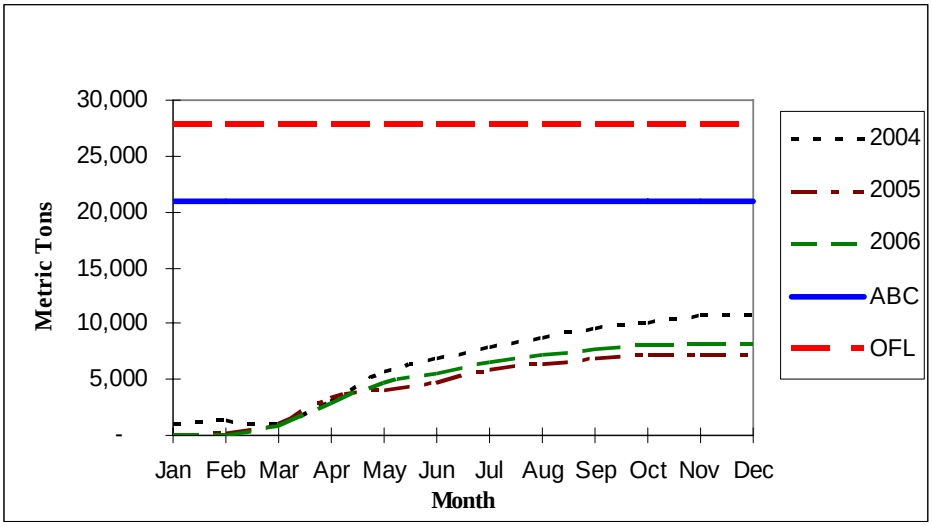
Cumulative GOA Grenadier Catch by Year (2004-06) Relative to ABC and OFL



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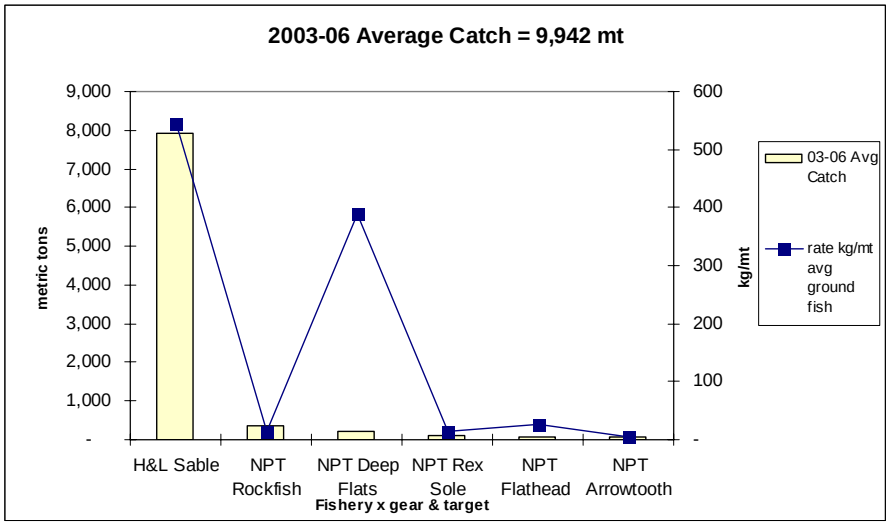
GOA Grenadier Average Catch by Gear and Target



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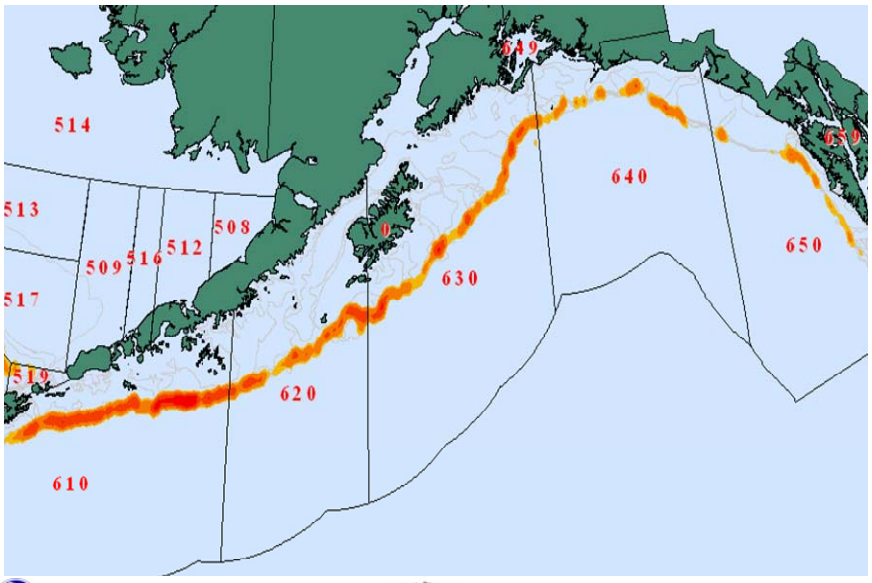
GOA Grenadier Catch Density (kg/mt groundfish) 2003-2005



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GOA Summary Table

GOA Species	Management Concern	Directed Fishery Possible	Gear/Target Potentially Affected	Spatial Context	Potential Management Measures	Potential Closure Timing
Squid (Tier 6)	Possibly	No	Pollock Pelagic Trawl	Very Discrete	Voluntary / Hot Spot	March
Sculpins (Tier 5)	No	No	Multiple Pot, NPT, H&L fisheries	Irregular	Broad Closures	n/a
Sharks (Tier 6)	Possibly	No	Sablefish H&L, Pollock Trawl, Pacific cod H&L, multiple NPT flatfish	Broad	Broad Closures	October
Octopi (Tier 6)	Possibly	No	Pacific cod Pot	Discrete	Voluntary / Hot Spots	October
Grenadiers (Tier 5)	No	No	Sablefish H&L, NPT Deep Flats	Broad / Bathymetry	Broad Closures	n/a

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Overview of Alternative 2: BSAI

- Alternative 2 would eliminate the "other species" assemblage and manage BSAI skates, sculpins, sharks, and octopi as separate assemblages.
- BSAI sharks would likely require management measures, primarily in the pelagic pollock trawl and hook-and-line Pacific cod fisheries in the August-September time frame.
- BSAI Octopi are a possible species of management concern if individually managed.
- Potential Octopi management measures could be limited to discrete areas closures beginning in October. Voluntary avoidance could also be used.

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Overview of Alternative 2: GOA

- Alternative 2 would eliminate the "other species" assemblage and manage GOA squids, sculpins, sharks, and octopi as separate assemblages. None of these species are of immediate management concern
- GOA squid and octopi could approach or exceed management benchmarks in the future. Both are caught in discrete areas and could be managed with hot spots.
- If GOA shark catch approaches the benchmarks, management measures to prevent overfishing could affect several fisheries across a broad geographic area.
- Sablefish hook-and-line, pollock trawl, Pacific cod hook-and-line, and multiple flatfish non-pelagic trawl fisheries harvest GOA sharks.
- It is possible that some localized areas of highest catch could be identified as areas to be voluntarily avoided. However, it is also possible that broad closures in a multitude of fisheries might be needed. The timing of such closures would be a function of the timing of the increased catch, which is not known.

Overview of Alternative 3: BSAI

- Alternative 3 would separate management of BSAI skates, and sculpins, from the other species assemblage.
- Neither BSAI skates nor BSAI sculpins are of management concern and could support directed fisheries.
- Management measures to prevent overfishing of the other species group (now sharks and octopi) would be similar to the management measures potentially needed to prevent overfishing of each of these species individually.
- These species are incidentally caught in different fisheries with different geographic catch characteristics.
- There does not appear to be a difference in potential effect on fisheries between Alternatives 2 and 3 in the BSAI.

Alternative 3 Overview: GOA

- GOA sculpins are not of management concern.
- The remaining species in the other species group, squid, sharks, and octopi, are all managed under tier 6 and are all potentially of management concern.
- The spatial contexts of incidental catch of the three remaining species in the other species group differ from one another, as do the fisheries that incidentally catch these species.
- Management measures would likely be similar to those used to manage each of these species individually.
- Therefore, there does not appear to be a difference in potential effect on fisheries between Alternatives 2 and 3 in the GOA.

Alternative 4 Overview

- Alternative 4 would manage only BSAI skates as a separate assemblage.
- BSAI skates would not be of management concern and could possibly support a directed fishery.
- Under this alternative, the BSAI other species group would consist of sharks, sculpins, and octopi.
- Given that a relatively high proportion of other species TAC comes from sculpins, and that available sculpin incidental catch is not heavily utilized, the remaining other species group would not likely be of management concern under this alternative.
- In essence, the large proportion of unused other species TAC coming from sculpins would mask the potential management concerns identified for sharks and octopi.

Alternative 5 Overview

- Alternative 5 would add grenadiers, a tier 5 species, to both the BSAI and GOA TAC specifications processes
- Grenadiers are not of present management concern in either the BSAI or GOA.
- Management of grenadiers as separate assemblages in both the BSAI and GOA (Option 1) is not likely to have direct effect (i.e. imposition of management measures to prevent overfishing) on the fisheries that incidentally catch them.
- Option 2 would add grenadiers to the other species groups. The addition of grenadiers to the other species groups would add a species with a relatively large, and lightly used, ABC under tier 5 management to these groups.
- This would tend to mask catch of tier 6 species in excess of their individual ABCs and OFLs.

Proposed Impact Analysis Methodology

- Identification of the target fisheries most likely to be directly affected by any needed management measures.
- Create a fisheries activity model for those fisheries
  - Spatial and temporal database and mapping of fishing activity using VMS data, observer date, weekly production reports, and fish tickets.
  - Catch composition, catch rates (of all species, including prohibited species), and effort level at a 5 kilometer grid level of spatial resolution
  - Catch-in-Areas database, and associated GIS output. This effort will be an advance of the previous product to update it with new and better data (e.g. VMS).

Methodology Continued

- Identification of the geographic polygons of potential closure areas.
  - Working with Inseason Management staff, this process will review cumulative incidental catch and catch rate data to determine the spatial and temporal extent of closures that Inseason management staff might take to prevent overfishing of species potentially of management concern.
- This process may provide a range of hypothetical closures, from broad to fine scale, so that potential effects can be determined across a range of potential actions.

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Methodology Continued

- Revenue At Risk Assessment.
  - Determines revenue that could be expected to be earned, based on recent fishing activity, in the area being considered for closure.
  - Catch-in-areas is converted to revenue using AFSC pricing data.
- Mitigation of Revenue at Risk
  - Industry will mitigate the revenue at risk by moving fishing effort to adjacent areas that remain open
  - The analysis will have to consider catch rates and effort levels in adjacent areas to determine whether revenue at risk can be mitigated.
- Operational Implications
  - How would mitigating activity affect operational costs (i.e. via lower catch rates and/or higher levels of required effort),
  - What might the affect be on prohibited species catch,
  - Or would mitigating activity tend to create operational burdens (e.g. fishing in areas of bad weather).

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Conclusion

- Equipped with the output of the catch-in-areas database and fishery activity model, the range of closure areas, and the revenue at risk analysis, a formal regulatory impact review (RIR) can be developed to accompany an Environmental Assessment and an Initial Regulatory Impact Assessment of potentially affected small entities.

- The RIR would inform the Council process by providing a detailed description of how potentially affected fisheries operate under the status quo, as well as assessing potential effects on fishing activity, revenue, and operational costs that each of the alternatives may have.